

## CLAIMS

We Claim:

1. A smart card loading system for loading value over a telecommunications network onto a smart card, said smart card loading system comprising:

a mobile telephone handset in communication with said telecommunications network, said handset including a card reader for communicating with a smart card arranged to be inserted in said handset, and an input interface for indicating a value to be loaded onto said smart card, said handset being arranged to generate a request message to load said value onto said smart card;

a gateway computer arranged to receive said request message from said handset over said telecommunications network and to retransmit said request message;

a funds issuer computer arranged to receive said request message and to debit a consumer account associated with said smart card; and

an authentication computer arranged to receive said request message and to authenticate said smart card, whereby said smart card may be authorized to load said value.

2. A smart card loading system as recited in claim 1 wherein said telecommunications network is a wireless network.

3. A smart card loading system as recited in claim 2 wherein said request message is integrated with the Short Message Service (SMS) channel of said telecommunications network.

4. A smart card loading system as recited in claim 1 wherein said authentication computer authenticates said smart card using a first cryptographic signature and generates

a second cryptographic signature to authenticate a load response, whereby said transaction is secured.

5. A smart card loading system for loading value over a telecommunications network onto a smart card, said smart card loading system comprising:

a mobile telephone handset in communication with said telecommunications network, said handset including a card reader for communicating with a smart card arranged to be inserted in said handset, and an input interface for indicating a value to be loaded onto said smart card, said handset being arranged to generate a funds request message which includes an authorization request certificate;

a gateway computer arranged to receive said funds request message from said handset over said telecommunications network and to retransmit said funds request message;

a funds issuer computer arranged to receive said funds request message, to authenticate said smart card using said authorization request certificate, and to generate an authentication response certificate for delivery to said smart card, whereby said smart card may validate said authorization request certificate and load said value.

6. A smart card loading system as recited in claim 5 wherein said telecommunications network is a wireless network.

7. A smart card loading system as recited in claim 6 wherein said funds request message is integrated with the Short Message Service (SMS) channel of said telecommunications network.

8. A smart card loading system as recited in claim 5 wherein in response to a successful load, said handset is arranged to generate a transaction certificate to be used for irrepudiation.

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9. A method of loading value over a telecommunications network onto a smart card, said method comprising:

receiving at a mobile telephone handset a request from a user to load a value onto said smart card inserted in said handset;

generating a funds request message which includes said value;

sending said funds request message over said telecommunications network to a funds issuer computer arranged to debit an account associated with said user;

generating a load request message including a first cryptographic signature;

sending said load request message over said telecommunications network to an authentication computer arranged to authenticate said smart card;

receiving a response message which includes a second cryptographic signature and an approval to load; and

validating said second cryptographic signature; and

loading said value onto said smart card.

10. A method as recited in claim 9 wherein said telecommunications network is a wireless network.

11. A method as recited in claim 10 wherein said messages are integrated with the Short Message Service (SMS) channel of said telecommunications network.

12. A method of loading value over a telecommunications network onto a smart card, said method comprising:

receiving at a mobile telephone handset a request from a user to load a value into a stored-value application of said smart card inserted in said handset;

opening a second application on said smart card capable of funding said stored-value application;

generating a funds request message which includes said value and an authorization certificate;

sending said funds request message over said telecommunications network to a funds issuer computer arranged to authenticate said second application and to generate an authentication response certificate;

receiving a response message which includes said authentication response certificate;

validating said authentication response certificate; and

loading said value onto said stored-value application of said smart card from said second application.

13. A method as recited in claim 12 wherein said telecommunications network is a wireless network.

14. A method as recited in claim 13 wherein said messages are integrated with the Short Message Service (SMS) channel of said telecommunications network.

15. A method as recited in claim 12 further comprising:

generating a transaction certificate to be used for irrepudiation.

16. A purchasing system for purchasing an item over a telecommunications network, said purchasing system comprising:

said telecommunications network for providing communication between entities;

a mobile telephone handset in communication with said telecommunications network, said handset including a card reader for communicating with a smart card arranged to be inserted in said handset, and an input interface, said handset arranged to generate an order request message;

a merchant server computer arranged to receive said order request message and to generate a purchase instruction message intended for said handset;

a payment server computer arranged to receive a draw request message from said handset, to generate a debit message intended for said smart card, and to confirm payment by said smart card to said merchant server computer, whereby said item is purchased over said telecommunications network and may be released to a user associated with said smart card.

17. A smart card loading system as recited in claim 16 wherein said telecommunications network is a wireless network.

18. A smart card loading system as recited in claim 17 wherein said messages are integrated with the Short Message Service (SMS) channel of said telecommunications network.

19. A method of purchasing an item over a telecommunications network using a mobile telephone handset, said method comprising:

sending an order request message to a merchant server computer;

receiving a purchase instruction message from said merchant server computer;  
processing said purchase instruction message locally;  
sending a draw request message over said telecommunications network to a payment server computer;  
receiving a debit message which includes a first cryptographic signature and an approval to debit said smart card; and  
validating said first cryptographic signature; and  
debiting said smart card, whereby said item may be released to a user associated with said smart card.

20. A method as recited in claim 19 wherein said telecommunications network is a wireless network.

21. A method as recited in claim 20 wherein said messages are integrated with the Short Message Service (SMS) channel of said telecommunications network.

22. A method as recited in claim 19 further comprising:

sending a result message which includes a second cryptographic signature over said telecommunications network to said payment server computer for confirmation, whereby said merchant server computer may be informed of said confirmation and release said item to said user.